Relationships Among Stress, Anxiety, Type A, and Pregnancy-Related Complications

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Full Text: Headnote ABSTRACT: The relationships among stress, state and trait anxiety, Type A personality and antepartum and postpartum health of women and their fetuses/infants were analyzed. A medical/psychosocial questionnaire and two inventories were mailed to each participant (n = 433) during each trimester of pregnancy. Medical records were reviewed to ascertain health problems. Type A and state anxiety were not as strongly related to maternal or fetal/infant complications as were stressor number, stressor intensity, or trait anxiety. Also, the predictors were generally stronger in the latter stages of pregnancy. Results suggest that health during and after pregnancy may be predicted on the basis of psychosocial problems, as well as the time period during which the problems occur. BACKGROUND An extensive amount of research has been performed during the last two decades on the association between psychosocial factors and pregnancy-related health factors. Although certain studies have found relationships between anxiety or stress and physical status of expectant mothers, fetuses, or infants (e.g., Barnett &Parker, 1986; Molfese, Bricker, Manion, Yaple, &Beadnell, 1987; Norbeck &Tilden, 1983) others have not (Beck, Siegel, Davidson, Kormeier, Breitenstein, &Hall, 1980; Berkowitz &Kasl, 1983). Limitations of previous studies included lack of consistency in psychological and social measures of health status, time of measurement, and the adequacy of statistical analyses used. This study attempted to address the previous methodological weaknesses in the following manner. First, measurements of psychosocial factors (e.g., State and Trait Anxiety, Type A) were obtained during each trimester. Second, the health status of the expectant mother and the fetus/infant was measured at three different times (pregnancy, labor and delivery, and up to six weeks postpartum). Third, a multi-method approach was used to quantify psychosocial functioning (surveys) and physical health status (e.g., self reports of cigarette smoking and drug usage, researcher's assessments of maternal pregnancy risk, and hospital and physician medical records). Fourth, this study measured for the first time, the relationship between Type A personality (Aggressiveness subscale) and health status of the expectant mother and fetus/infant. METHOD Subjects The initial lists of prospective participants consisted of 546 women in their first trimester of pregnancy obtained from three suburban Detroit hospitals and ten private Ob/Gyn clinics. When contacted by telephone, 433 women elected to participate in the study; 93% (n = 402) returned the first packet mailed to them; 85% (n = 366) returned the second packet; and 82% (n = 357) returned the third. Women who had miscarriages (n = 23) could not complete all three survey packets, but were included in the study. Materials The materials used were a medical/psychosocial questionnaire that sought information on health and psychosocial-related factors, the Spielberger State-Trait Anxiety Inventory (STAI), and the Jenkins Activity Survey (JAS). Stress measures were formulated using the Social Readjustment Rating Scale (SRRS). With regard to the latter, subjects were given a list of stressful events (e.g., divorce, death, marital separation) and asked to check those they had experienced recently. Scoring the SRRS allows the researcher to determine the intensity of a particular stressor (e.g., death of a spouse is given a weight of 100 points while marital separation is 65 points) as well as the total number of stressors by summing the individual stressors. The Spielberger STAI asked subjects how frequently they experienced tension, strain, indecisiveness, and other forms of pressure at the present time (State). They were also asked how frequently they had disturbing thoughts, felt inadequate, and the like in general (Trait). The Aggressiveness subscale of the JAS asked subjects to describe their temper (from "fiery and hard to control" to ". . .never get angry") when they were younger as well as presently. Procedure Each participant was contacted by telephone during her first trimester of pregnancy, and each trimester thereafter, to notify her that a packet

was being mailed. Participants who did not return their packets within ten days were recontacted. A packet containing the medical/psychosocial questionnaire and two surveys was mailed to each participant on each occasion. The official consent form indicating the subject's ability to withdraw from the study at any time and assurances of confidentiality was mailed with the first packet. Hospital and physician medical records were reviewed for each participant after the six week postpartum period to document all complications. Analyses were performed using ANOVA primarily. Product-moment correlations were computed when appropriate. Independent Variables Five variables were used as predictors of pregnancy-related complications: state and trait anxiety, Type A personality (aggressiveness), stressor number, and stressor intensity. A description of these items is presented in Table 1. Dependent Variables The researchers created an inventory of maternal and fetal complications by listing all of the complications for the entire sample. The contents were then categorized with the assistance of Williams Obstetrics (Pritchard, McDonald, &Gant, 1985) and an Ob/Gyn consultant to create an exhaustive and mutually exclusive inventory. Each of the complication variables is dichotomous and indicates the presence or absence of a complication. Maternal Pregnancy Complications were experienced by 55% of the sample preceding the onset of labor. Of the ten complications, hemorrhagic (most common), hypertension, or cervical or vaginal problems occurred most frequently. Fetal Pregnancy Complications included problems that occurred between the third month of pregnancy and delivery. Fourteen percent of the sample experienced at least one complication with fetal activity testing being the most common problem. Maternal Labor and Delivery Complications were experienced by 61% of the sample. Operative delivery and birth canal trauma were the most common problems. Twenty percent of the sample experienced Fetal Labor and Delivery Complications of which heart problems were the most frequent. Thirty-six percent of the women experienced Maternal Postpartum Complications. Urinary tract and breast problems were the most common complaints. Infant Postpartum Complications, of which respiratory problems were the most common, were experienced by nearly nineteen percent of the sample.

Table 1
Description of Independent Variables Used in Study on Stress, Anxiety, Type A, and Pregnancy-Related Complications

Variable Name	*Definition*	*Instrument*	*Description of Instrument*
1. Stress	Cohen (1981) defined stress as a stimulus, a response, or transaction between an individual and the environment. Lobel and Dunkel-Schetter (1990) defined stress as having an environmental perceptual, and emotional component.	The Social Readjustment Rating Scale (SRRS, Holmes & Rahe, 1967)	A list of 43 life events are checked, summed, and each event is rated as to the degree of adjustment required. Points are assigned to each event, then summed to estimate social readjustment.
a. Number	Amount of stressors in a person's life during a specified period.		
b. Intensity	Degree of discomfort or adjustment during a specified period.		

Table 1
Continued

Variable Name	*Definition*	*Instrument*	*Description of Instrument*
4. Psycho-social Factors	All the measurements noted under the instruments column.	SRRS, STAI, and JAS.	
5. Psycho-social Functioning	The scores received on the measurements noted under the instruments column.	SRRS, STAI, and JAS.	
6. Physical Health Status (or health status) of Mother	Physical problems which contribute to mother's medical problems and may be associated with pregnancy complications	1. Medical/Psychosocial Questionnaire	Survey includes self-reports of previous pregnancy problems, cigarette smoking and drug use.
		2. Maternal pregnancy risk	Based on physician and researcher evaluation.
		3. Hospital and medical records	
2. Anxiety	Tuma & Maser (1985) defined anxiety as an emotional component of stress, characterized by verbal reports of fear, dread, panic, worry, obsessions, guilt, inability to concentrate.	The State-Trait Anxiety Inventory (STAI, Spielberger, 1970)	Two Scales
a. State Anxiety	A response to stressfully appraised conditions.		a. 20 questions assess intensity of anxiety presently felt.
b. Trait Anxiety	A individual disposition or tendency		b. 20 questions assess intensity of anxiety generally felt.
3. Type A	Rosenman (1978) defined the critical aspects of Type A as the excesses of aggression, hurry, and competitiveness, manifestations of a struggle to overcome environmental barriers.	Jenkins Activity Survey (JAS, Jenkins, Zyzanski, & Rosenman, 1979). Only the hostility factor was measured.	A 52-question survey asked questions about behavioral responses such as temper.

RESULTS The analyses presented in Table 2 reveal several interesting findings with regard to the relationships between stress and anxiety and complications. Three general patterns were noted. Problems experienced by the fetus/infant were not related to the independent variables as are problems encountered by the mother. Only stressor number ($F = 7.38$, $p < .01$ and $F = 4.93$, $p < .05$) and stressor intensity ($F = 5.07$, $p < .05$ and $F = 3.89$, $p < .05$) in the second and third trimesters respectively related to fetal complications during labor and delivery. Second, the strength of the relationships increased over the course of the pregnancy. Specifically, there were nearly twice as many significant relationships in the third trimester (13) as there were in the first (7). Finally, the independent variables were much more predictive of problems during labor and delivery or postpartum than during the pregnancy. For example, there were ten significant relationships involving maternal labor and delivery complications but only four for maternal pregnancy complications.

Table 2
Relationships Among Stress Variables and Pre-, Peri-, and Post-Natal Pregnancy Complications[a]

	(1)[b]	(2)	(3)	(4)	(5)	(6)	(7)[c]
First Trimester							
State Anxiety[d]							
Trait Anxiety	5.51**		7.58**		4.83*		
Type A							
Stressor Number			4.38*		4.49*		
Stressor Intensity			4.91**		5.86**		
Second Trimester							
State Anxiety							−.137**
Trait Anxiety	4.56*		4.49*				−.128**
Type A	4.89*						
Stressor Number			16.22**	7.38**	4.12*		
Stressor Intensity			6.95**	5.07*			
Third Trimester							
State Anxiety			4.21*		5.33**		
Trait Anxiety			3.69*		4.26*		
Type A	5.81**						

Table 2
Continued

	(1)[b]	(2)	(3)	(4)	(5)	(6)	(7)[c]
Stressor Number			17.79**	4.93*	6.67**		−.21**
Stressor Intensity			18.17**	3.89*	7.09**		−.24**

[a]For purposes of clarity of presentation, only those relationships where $p < .05$ are shown.
[b]The dependent variables are as follows: (1) Maternal pregnancy complications; (2) Fetal complications during pregnancy; (3) Maternal labor and delivery complications; (4) Fetal complications during labor and delivery; (5) Maternal complications postpartum; (6) Infant complications post-partum; (7) Birthweight.
[c]The relationships between the independent variables and birth weight are presented as Pearson's r coefficients.
[d]The relationships between the independent variables and the pregnancy complications are expressed as F-scores which resulted from ANOVA.
*$p < .05$.
**$p < .01$.

Trait anxiety was a more consistent predictor of complications and birthweight than state anxiety over the course of the pregnancy. During the first two trimesters, state anxiety in the second was related only to birthweight (r = -.137). Trait anxiety predicted maternal pregnancy complications in the first trimester (F = 5.51, p <.01) as well as labor and delivery complications for the mother for all three trimesters. In the third trimester, state and trait respectively were related to maternal labor and delivery (F = 4.21, p <.05 and F = 3.69, p <.05) and maternal postpartum (F = 5.33, p <.01 and F = 4.26, p <.05) complications. Compared to the other independent variables, Type A had minimal predictive power. Type A was related to maternal pregnancy complications in the second (F = 4.89, p <.05) and third (F = 5.81, p <.01) trimesters. It should be noted, however, that aside from trait anxiety, Type A was the only predictor of maternal pregnancy complications. Stressor number and intensity were generally stronger predictors of the dependent variables in the second and third trimesters. As mentioned earlier, the stressor variables were the only predictors of fetal complications during labor and delivery. Stressor number had impressively high F-scores with maternal labor and delivery problems in the second (F = 16.22, p <.01) and third (F = 17.79, p <.01) trimesters, as did stressor intensity with the same variable in the third (F = 18.17, p <.01). Birthweight was correlated with stressor number (r = -.21) and intensity (r = -.24) in the third trimester. CONCLUSIONS This paper has shown that stress and anxiety are related to health problems during and shortly after pregnancy, especially for the mother. According to our analyses, health-related problems stemming from stress or anxiety are more apt to affect the mother herself than her fetus. We have also shown that the effects of stress and anxiety appear to be cumulative. That is, relationships between stress and anxiety and pregnancy-related problems are generally strongest in the third trimester; and this suggests that mothers and fetuses can endure psychological problems if these are not prolonged. Among the independent variables, Type A and state anxiety were the poorest predictors of pregnancy-related problems. In contrast, stressor number and intensity, and trait anxiety were fairly similar in their predictive powers. These findings suggest that Type A aggressiveness or immediate or situational anxiety are not significant agents of health problems for mothers and fetuses as are factors which tap stress or long-term dispositional anxiety. The results of this research supports the practice of expectant mothers working closely with their physicians, psychologists, and other health care professionals in order to reduce the potential impact of stress or anxiety on their health or that of their fetuses. Specifically, preconceptional counseling could offer prospective expectant mothers support and coping strategies to deal with difficult experiences or situations that provoke high levels of stress or anxiety. References REFERENCES Barnett, B. &Parker, G. (1986).

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